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THE ROLE OF THE SURVEILLANCE, RECONNAISSANCE AND INTELLIGENCE GROUP IN THE MARINE AIR-GROUND TASK FORCE

BY

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IN THE MARINE AIR-GROUND TASK FORCE

An Individual Study Project
Intended for Publication

by

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U.S. Army War College
Carlisle Barracks, Pennsylvania 17013
12 March 1990

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AUTHOR: Jan C. Huly, LtCol, USMC

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In 1988, the Commandant of the Marine Corps convened a Force Structure Study Group to provide recommendations on how the Marine Corps should be organized to fight in the near and mid-term. One of the Group's recommendations was the consolidation of the Fleet Marine Force information gathering and intelligence processing and disseminating assets into one organization, the Surveillance, Reconnaissance and Intelligence Group (SRI Group). Though this "Warfighting Enhancement" was one of the Commandant's principal initiatives, some individuals have not been convinced of the SRI Group's usefulness. This study seeks to overcome some of the institutional resistance by examining the rationale for the SRI Group, analyzing the intelligence architecture needed to support the Marine Corps' concept for defeating future threats, ("Maneuver Warfare") and proposing a concept of operations. Specific roles and divisions of labor for SRI Group representatives and MAGTF staff principals will be presented. Finally, I will offer some possibilities for the future direction of the SRI Group.

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THE ROLE OF THE
SURVEILLANCE, RECONNAISSANCE AND INTELLIGENCE GROUP
IN THE
MARINE AIR-GROUND TASK FORCE

"Nothing is so contradictory and nonsensical as this mass of reports brought in by spies and officers sent on scouting missions. To draw the truth from this mass of chaotic reports is something vouchsafed only to a superior understanding; mediocre ones are lost therein . . ."

MOLTKE

Military analysts have long recognized the difficulties in providing timely, concise intelligence support to operational units. And recently, systems integrating command, control and communications with intelligence support (C³I) systems in the Marine Corps have undergone scrutiny and criticism. In 1983, commanders in Beirut, Lebanon were so inundated with improperly analyzed information that they were unable to ascertain adequately the threat opposing them; a shortcoming with disastrous results. Operation Urgent Fury in Grenada and after-action reports on almost every major recent exercise have highlighted the need for not only improved intelligence support, but for more reliable and inter-operable communications as well. Further, recent actions in Panama proved that service weaknesses in reconnaissance and intelligence gathering and analyzing still exist.

To improve intelligence support within Fleet Marine Forces, a recent study recommended realigning the intelligence gathering,

processing and disseminating assets and maritime special purpose forces under a new organization, the Surveillance, Reconnaissance and Intelligence Group (SRI Group). The Commandant of the Marine Corps approved this recommendation, and directed II Marine Expeditionary Force (MEF), Fleet Marine Force (FMF), Atlantic, to activate the 2D SRI Group, at Camp Lejeune, North Carolina on 1 October 1988. Since then, SRI Groups in both I MEF and III MEF have also been activated.

Although this force structure reorganization is one of the principal warfighting enhancements the Commandant of the Marine Corps (CMC) directed since his appointment, there is a reluctance to fully support it. 245 personnel structure billets and nine major organizations were transferred from various elements of the MEF, to the SRI Group. These transfers necessitated commensurate changes to previously existing command and control relationships. Because they occurred rather quickly, little specific supporting information and rationale for the changes was provided. This resulted in misunderstanding of the purpose and functions of this new Group and resistance to implementing the concept. Opposition emanated from three quarters; 1) those individuals in MEF elements that gave up the personnel structure spaces, 2) staff principals that perceived they could no longer direct the activities of those units that transitioned to the SRI Group, and 3) those commanders of major units that transferred to the SRI Group, whose previous tasking and reporting chains to higher

headquarters were interrupted by a seemingly unnecessary lower-level of bureaucracy the new SRI Group headquarters interposed.

In this study, I will attempt to dispel some of the myths and misperceptions about this initiative. Rationale for the composition of the SRI Group will be presented by studying the intelligence architecture necessary to support future operations. Additionally, I will propose a concept for the operational integration of the enhanced capabilities the new structure offers. Finally, I will offer possibilities for future SRI Group development.

ASSUMPTIONS AND THREAT

Before undertaking any discussion of the SRI Group, its founding assumptions and limitations must be considered. The following have been consolidated from applicable Marine Corps planning documents: 1

A. The missions and organization of the Marine Corps will remain as directed in Title 10 (USC).

B. Future employment of the Marine Corps will be primarily as an expeditionary, "come as you are" force in mid and low-intensity conflicts. However, the Marine Corps must be ready to conduct operations encompassing the entire spectrum of war.

C. Marine operational forces will continue to be employed as task organized, combined arms teams, termed Marine Air-Ground Task Forces (MAGTFs). (See Note ¹, below.)

1. MAGTFs will be employed using maneuver warfare philosophy and competitive strategy logic.

2. MAGTFs will be task organized as Marine Expeditionary Units (MEUs), Marine Expeditionary Brigades (MEBs), and Marine Expeditionary Forces (MEFs). (See Note ², below.)

¹. These immediately deployable, self-sustaining, hard-hitting forces combine aviation combat, ground combat and logistics capabilities under a single commander. Additionally, MAGTFs are structured to provide command, control and coordination for a Joint or Combined force, or they can be employed as a component of a Joint force, or as a single Service force under a CinC. MAGTFs are primarily employed as conventional, expeditionary forces. Certain elements of the MAGTF possess special training and equipment necessary to conduct a wide spectrum of maritime special and selected unconventional warfare operations.

². The MEU is the smallest MAGTF and contains a reinforced infantry battalion, a composite aircraft squadron and a combat service support element. Normally sea-based aboard 3-5 Navy amphibious ships, it may serve as the forward element of a MEB. A MEB is a task organized force comprising a regimental landing team of 2 to 5 infantry battalions, a composite aircraft group (consisting of fixed wing aircraft, helicopters, aviation command, control and anti-air warfare elements) and an appropriately sized combat service support element. It normally embarks aboard 20 (plus) Navy amphibious ships. It can be airlifted with organic equipment or to "marry-up" with prepositioned supplies and equipment. The MEF is the largest and most powerful of the MAGTFs. It is built around a Marine division, Marine aircraft wing (roughly equivalent to a numbered US Air Force) and a force service support group.

a. Each of these MAGTFs will have some level of special operations capability. (See note ³, below.)

b. Some type, degree, and attachment of the SRI Group capabilities will be required to support MAGTF operations regardless of the size of the MAGTF deployed.

D. Performance by some element of the MAGTF of the following intelligence cycle will be required through the mid-range period:

- Planning and Direction
- Collection
- Processing
- Production
- Dissemination

Tactical operational security, civil affairs, employment of special weapons, psychological operations, barrier and denial operations, survival, evasion, resistance and escape operations, security, handling of POWs and detainees and processing captured documents and materiel, are missions that reside outside the SRI

³. The Marine Corps structured maritime special purpose operations forces represent an immediate response capability in a wide variety of situations. However, these forces are neither a special operations force by formal definition nor does the Marine Corps provide forces with the primary mission of conducting special operations. Rather, they are general purpose forces, which by enhanced training and equipment, achieve maritime special operations capabilities. These include clandestine recovery operations, specialized demolitions operations, tactical recovery of aircraft and personnel and in extremis hostage rescue.

Group. However, the Group has a salient interest in these areas as does the entire MAGTF.

E. The missions, functions, roles and doctrine governing some units and elements comprising the SRI Group will remain the same; however, some newly created units and elements fill requirements the MAGTF needs to engage and defeat enemy forces.

1. A significant redefinition of some specific tasks, tactics, techniques, procedures, training, structure and organization is required.

2. Some acquisition of new equipment and materiel is necessary to meet required operational capabilities and accomplish MAGTF missions.

F. The SRI Group and the MAGTF must be inter-operable with other US and allied Services and agencies and will continue to work to enhance that capability.

The Marine Corps Campaign Plan (MCCP), the Marine Corps Long Range Plan (MLRP), and the MAGTF Master Plan (MMP) describe in detail the battlefield environment and the threat. As these references outline, the probability of future direct conflict between our Nation and our most formidable adversary, the Soviet Union, has seemingly declined over the past few years. But, considering the conflicting interests between the United States and many Soviet Union surrogates, international terrorists and drug cartels throughout the world, the probability of our involvement in low and mid-intensity conflict is substantial. Additionally, the improving skill and technology of these

potential adversaries greatly enhance their ability to fight. Recent actions in Panama aside, the Marine Corps will play a significant expeditionary role in both deterring and responding to threats from adversaries, particularly in theaters not already having a US presence and logistics infrastructure.

MANEUVER WARFARE

"The diversity of prospective battlefields is virtually unlimited. No one combination of firepower and mobility is uniformly advantageous in all situations."²

How MAGTFs propose to fight in future conflicts must be the guiding principle behind how they are organized and prepared for war. In his study, Karl von Clausewitz observed that war is a simple enterprise of imposing one's will upon an opponent. But, the conduct of war becomes extremely difficult as many factors impinge on it. Friction, fluidity, disorder and the influence of the human dimension reacting to the danger and violence of combat, all contribute to the uncertainty of the "fog of war."³ In previous conflicts, with some notable exceptions, the Marine Corps relied on attrition warfare as its basic battle doctrine. Recent warfighting doctrine based upon studies on the nature and theory of war and the anticipation of the influences that forthcoming budget reductions and short-lived public and political support will bring to future conflicts, caused the Marine Corps to derive and adopt general ways of thinking about warfare and a doctrine for fighting based on maneuver.⁴

The doctrine of maneuver warfare was only recently adopted by the Marine Corps (Fleet Marine Force Manual-1 containing the Marine Corps' philosophy on maneuver warfare was published 6 March 1989). Still, it is not a new idea. Sun Tzu exhorted the basics in 400 B.C. as follows:

"Now an army may be likened to water, for just as flowing water avoids the heights and hastens to the lowlands, so an army avoids strengths and strikes weaknesses."⁵

More formally described, maneuver warfare is:

"...a warfighting philosophy that seeks to shatter the enemy's cohesion through a series of rapid, violent and unexpected actions which create a turbulent and rapidly deteriorating situation with which he cannot cope."⁵

An important aspect of maneuver warfare philosophy is that a commander must take advantage of the chaos of war by creating as much uncertainty as possible for his opponent, while exploiting the opportunities the chaos creates.

"The commander who possesses the Command, Control, Communications and Intelligence Systems (C³I) to quickly and effectively penetrate the "fog" of the battlefield to ascertain enemy strengths and weaknesses, develop and distribute plans that synchronize his forces and firepower at the critical time and place, will achieve victory."⁷

Recent evaluations of scenarios of conflict at all levels show that:

"Nothing is more important to success on the battlefield than effective command and control."⁸

To be effective, the C³I system must be streamlined so that simple plans, essential for success can be formulated and conveyed. C³I systems must be flexible enough to allow a commander to recognize and exploit opportunities as they occur on the dynamic battlefield, with combat power and forces positioned for quick reaction and execution of plans.⁹ Although maneuver warfare accepts uncertainty on the battlefield, it needs a focused information system to assist the commander in making decisions that will influence the probability of results in spite of the random nature of combat. The system should provide detailed information about weather, terrain and enemy forces at not only equivalent levels of command, but two levels up and one level below, and within the entire area of interest.

MAGTF commanders employing maneuver warfare must:

- direct, support and coordinate subordinate unit operations against enemy first-echelon units.

- attack enemy forces sustaining and supporting enemy first echelon forces.

- interdict enemy second-echelon and follow-on forces to prevent them from closing on and influencing the battle.

-take whatever actions are necessary for rear area security.¹⁰

While there is no simple formula for winning, there are certain key factors that contribute to success on the battlefield. One of these key factors is support to the MAGTF elements through intelligence, counterintelligence and electronic warfare operations. Intelligence and combat information allow the commander to see the battlefield and the enemy so that he can employ MAGTF assets when and where they can get decisive results. Counterintelligence protects the MAGTF from enemy intelligence efforts. Electronic warfare degrades the enemy's ability to employ his combat resources. These efforts translate into four major support tasks: situation development, target development, electronic warfare and counterintelligence.¹¹

The first major task, situation development (or predictive intelligence), integrates and analyzes information collected from all sources and determines the enemy's probable courses of action.

The second task, and key to maneuver warfare, is the identification and selection of critical enemy vulnerabilities. It is from these vulnerabilities that the MAGTF commander selects a point to focus his resources against. Once this "point of main effort" is identified, the commander decides what steps are necessary to achieve victory by shaping the battlefield in time and space. The commander must then convey his intentions to his subordinates.

The ability to accomplish successfully the first two tasks is inextricably linked to the electronic spectrum.

"Electronic warfare is an element of combat power as is fire and maneuver."¹²

This third major support task, electronic warfare (EW), combines the offensive measures of electronic support measures (ESM) and electronic counter measures (ECM), with the defensive measures of electronic counter-countermeasures (ECCM). (See note ⁴, below.)

The fourth major task is counterintelligence (CI). CI activities counter enemy intelligence collection, sabotage, subversion and terrorism threats against friendly forces.

All elements of the MAGTF have implied missions to report combat information based on their primary missions, capabilities and locations on the battlefield. The aviation combat element's (ACE) extensive ground and airborne reconnaissance, surveillance and observation capabilities represent a substantial portion of the MAGTF's combat information collection capability. The ground combat element (GCE) gets combat information from direct observations by maneuver, reconnaissance and engineer units, and by means of organic sensors and fire support agencies. The combat service support element (CSSE) is also a ready source of

⁴. ESM are actions taken to search for, intercept, locate, and identify sources of radiated electromagnetic energy for immediate use on the battlefield. ECM are actions taken to prevent or reduce effective use of the electromagnetic spectrum by the enemy. ECCM are actions taken to retain friendly use of the electronic spectrum. (JCS Pub 3-51.)

combat information. Military police and maintenance units with semi-fixed locations, make use of road networks and gain valuable insight on prisoners, indigenous personnel and terrain.

Other MAGTF intelligence assets collect human and signals intelligence, conduct long-range reconnaissance and surveillance, interrogate prisoners and monitor sensors throughout the battlefield. How these assets pull together to collect and process is the key to production of all-source intelligence. This intelligence, added to normal combat information reporting, satisfies the commander's informational and operational requirements.

When provided in a timely manner, systematic and continuous intelligence preparations allow the MAGTF commander to make decisions faster than the enemy commander and to conduct operations based on planned events that cause the enemy to react to friendly initiatives. This situation is created by a command and control system that allows for close integration of the planning and management functions.¹³

PREVIOUS INTELLIGENCE ARCHITECTURE

Previously, the Fleet Marine Forces had multiple assets spread throughout all elements of the MEF to collect and analyze information, fuze and disseminate intelligence, and conduct maritime direct action missions. The grouping of these assets was without any apparent logic, or was based on peacetime

geography or administrative concerns and seriously affected the outlook of support to the MAGTF commander. Marine aircraft wings retained administrative control of some counterintelligence teams and imagery interpretation units and operational control of intelligence analysts. The Marine divisions had operational and administrative control of ground sensors, remotely piloted vehicles, some interrogators and translators and counterintelligence assets and analysts. The MEF exercised operational control, while Marine force service support groups retained administrative control, of deep reconnaissance and ANGLICO assets, SIGINT/EW units and force communications assets.¹⁴

In January, 1988, the Commandant of the Marine Corps convened the Force Study Structure Group to:

"Take a look at how the Marine Corps will fight in the next century."¹⁵

For more than a month this body of 35 experienced, operationally-oriented officers of various occupational specialties deliberated, considering the Corps' current capabilities, the global threat assessment, technological forecasts and the future budget environment. One of their conclusions was that the C³I structure was too disjointed to support the maneuver warfare philosophy. They recommended to the Commandant of the Marine Corps (CMC) the consolidation of MAGTF intelligence gathering, processing, and disseminating assets under one headquarters. To

this end, CMC subsequently formed the SRI Group, one of his principal "War Fighting Enhancements."

Planning guidance emanating from Headquarters Marine Corps in 1988 reflected the seriousness and urgency of the implementation of this initiative. The Marine Corps Campaign Plan (MCCP) captures the intent of the Corps for today and tomorrow, and it institutionalizes the Commandant's intent across a variety of areas important to the Marine Corps. Prominent in the description of the warfighting enhancement initiatives was the consolidation and manning of the SRI Group. The Marine Corps Long-Range Plan (MLRP) and the global framework provided by the maritime strategy provide goals that serve as the basis for the formation of The MAGTF Master Plan (MMP). The MMP is the operational foundation of MAGTF capabilities and forms the operational basis for POM development. The MMP establishes the organization, manning, equipping, doctrine and operational technique development and training for MAGTFs of the FMF. The current MMP contains a prioritized list of 49 capabilities that are to be emphasized within the Marine Corps. Fourteen of these 49 capabilities apply directly or exclusively to the SRI Group, and another 26 capabilities apply significantly or indirectly to the SRI Group in consonance with other elements of the MAGTF. Further, the MMP establishes manning levels for the units of the SRI Group at the two highest priority tiers.

A range of detailed, subordinate MAGTF plans and mission area analyses derive from the MMP including the MAGTF Command

Plan, another key document for MAGTF operational planning. Because of the guidance in the MAGTF Command Plan, certain SRI Group specific capabilities are currently being reviewed at the Marine Corps Combat Development Command. But substantial doctrine, even to include a Table of Organization and mission statement, has yet to be published. A review of subordinate, standing operating procedures including Tri-Marine Expeditionary Force SOPs, Tri-Amphibious Group instructions and subordinate MAGTF SOPs on operations and intelligence matters suggest that while provisions will be included for future consideration of the SRI Group, no definitive guidance currently exists. This guidance and the thought and decision process required to carry it out is overdue. The FMF Atlantic, Program of Action and Milestones (POA&M), establishes a deadline of 3d quarter, FY90, for the first SRI Group to be fully functional. The second SRI Group in FMF, Pacific is to be full / functional one year later.

THE SRI GROUP STRUCTURE

The Group is commanded by a colonel and has a staff comparable in size to the staff of a regiment or aviation group. A headquarters and service company provides the administration and logistics support functions. Figure 1 depicts the SRI Group structure.

SURVEILLANCE, RECONNAISSANCE, INTELLIGENCE GROUP

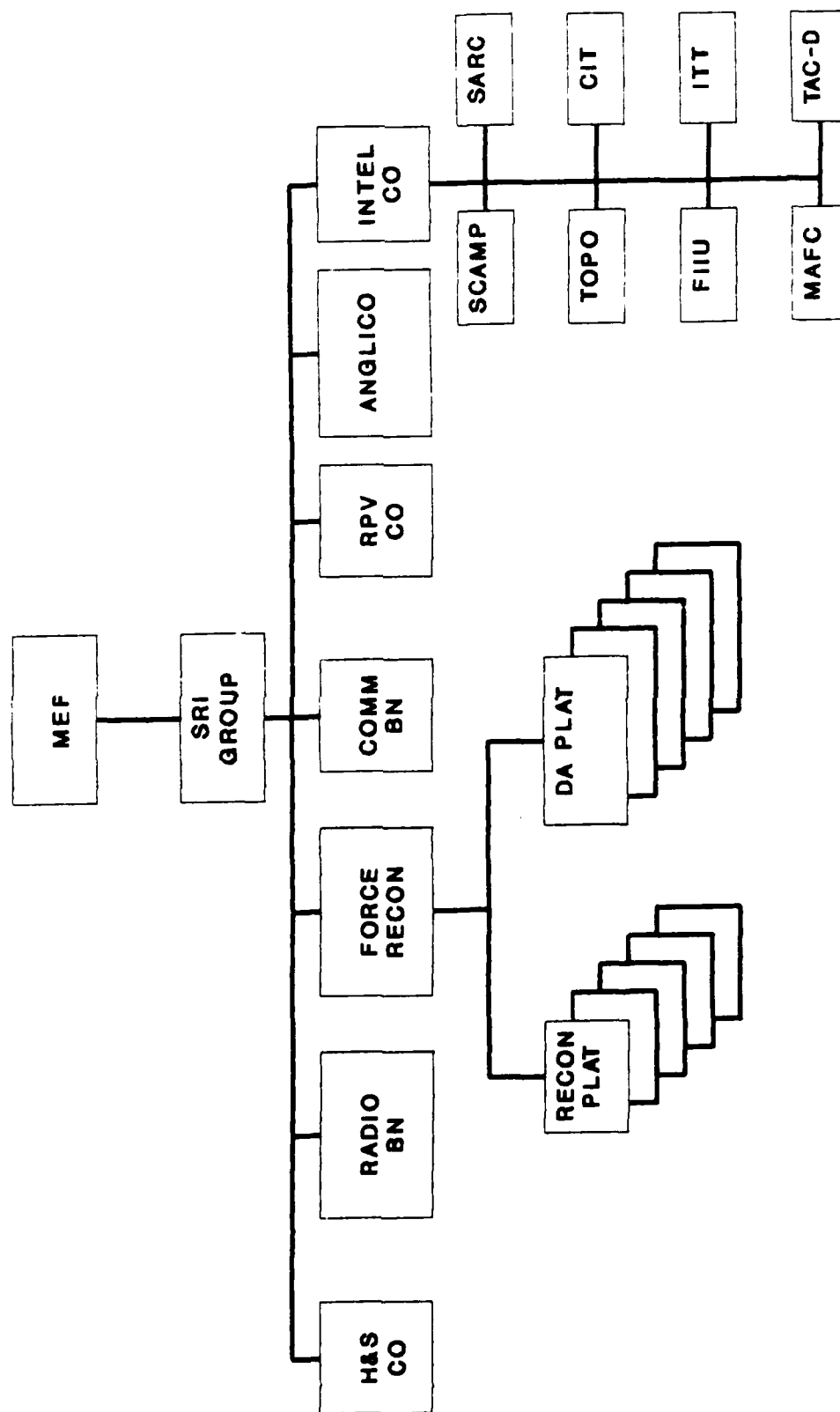


FIGURE 1

Other units comprising the SRI Group are:¹⁶

A. Intelligence Company (INTELCO). INTELCO, a newly created organization in the SRI Group, coordinates, supports and synthesizes under one commander the efforts of intelligence gathering organizations that previously had been scattered throughout the MAGTF. The proposed mission of INTELCO is to train, equip and provide forces to the SRI Group and the MAGTF to fulfill intelligence planning and collection operations, all-source intelligence fusion, and dissemination of information/intelligence to all MAGTF elements. Tactical doctrine and expertise in intelligence related matters will be provided from the following elements that comprise INTELCO:¹⁷

1. Counterintelligence Teams (CITs). CITs collect information regarding enemy threats of espionage, sabotage, subversion and terrorism. They also conduct special counterintelligence operations that identify, locate and neutralize those threats. CITs, working with the Interrogator-Translator Units and Force Reconnaissance elements are the MAGTF's HUMINT.

2. Interrogator-Translator Unit (ITU). ITUs plan for and collect information from human sources and foreign language documents to support operations.

3. Force Imagery Interpretation Unit (FIIU). The FIIUs plan for and provide imagery and imagery interpretation to support training, planning and combat operations.

4. Topographic Platoon (TOPO). The TOPO provides mapping products, geodetic, topographic and coastal hydrographic surveys and intelligence.

5. MAGTF All-Source Fusion Center (MAFC). Recently created on recommendations from the FSS Group, the MAFC is the heart of the SRI Group. The MAFC receives information from sources within and external to the MAGTF, integrates and analyzes it to process and produce intelligence and provide collection management support to the G-2/S-2. It is comprised of intelligence specialists, ground and air order-of-battle analysts, SIGINT/EW analysts, HUMINT specialists, collection managers, and target intelligence analysts.

6. Sensor Control and Management Platoon (SCAMP). SCAMP is responsible for emplacing, monitoring and recovering ground sensors.

B. Force Reconnaissance Company (FORECON). FORECON conducts pre-assault and deep post-assault reconnaissance operations within the amphibious objective area to observe, identify and report enemy activity. The recent creation of five Direct Action Platoons within the company enhances the previously existing capability to conduct overt or clandestine direct action missions in offensive, strike, recovery, special warfare and special mission operations as part of the Maritime Special Purpose Force.

C. Radio Battalion (RADBN). The RADBN provides tactical SIGINT, ground electronic warfare, and communications security

monitoring and analysis in support of the MAGTF. Additionally, Radio Reconnaissance Teams (RRTs) from RADBN deploy in support of advance force and other operations as required to provide the MAGTF with low-level, signal search and development, tactical SIGINT reporting and to do collection taskings. Improved tactical and clandestine insertion skills allow the RRTs to be incorporated as key support elements of the Maritime Special Purpose Force.

D. Remotely Piloted Vehicle Company (RPV). RPVs conduct day and night operations in providing real-time enemy observation and deception in support of both ground and aviation combat elements. Combining RPVs with other intelligence, deception and target acquisition assets enhances these capabilities. New generation RPVs, scheduled for delivery "soon" will have expanded capabilities.

E. Tactical Deception Platoon (TAC-D). This organization is also a result of the FSS's recommendations. The TAC-D platoons are not yet fully manned or functional. In recent years, the Marine Corps has made poor, if any, use of active tactical deception. As an element of maneuver warfare, tactical deception efforts should be incorporated under the cognizance of the MAGTF G-3/S-3. The TAC-D platoon will have the capability to use visual, audio, sensory means and the electro-magnetic spectrum to deceive the enemy.¹⁸

F. Communication Battalion (COMMBN). COMMBN provides communications support to the MAGTF command element and other

elements as necessary. Next to the creation of the SRI Group, the inclusion of the COMMBN in the Group organization has created the largest controversy. Opponents of its inclusion in the Group maintain that the functions of the COMMBN have little to do with the general mission of the SRI Group and that it creates a needless layer of bureaucracy between the MAGTF G-6/CEO and the communication assets. These opponents are short-sighted. The deficiencies noted in the communications and intelligence systems are not unrelated. The Marine Corps faces an ever increasing challenge of integrating all aspects of C³I² systems to meet the demands of ensuring the critical flow of information to the commander so that he can act faster than the enemy. Rapid, reliable and secure communications provide means for;

- tasking and coordinating intelligence and electronic warfare resources.

- receiving intelligence, combat information and target data.

- disseminating intelligence, combat information and target data to the aviation combat element, maneuver units and fire support elements.

By including the COMMBN in the SRI Group, the Corps has taken an important step in ensuring the integration of elements in training, planning for and using the electro-magnetic spectrum.

Concerns of additional layers of bureaucracy between the MAGTF G-6/CEO and the COMMBN elements appear to be unfounded at

this time. The SRI Group commanders and detachment OICs manage this as most other assets, by exception, and do not intercede in the important functional link between the staff principal and the COMMBN.

G. Air Naval Gunfire Liaison Company (ANGLICO). ANGLICO provides ground control and liaison agencies for the planning and employment of naval gunfire and naval aviation support for allied or US Army forces. Including ANGLICO in the SRI Group has also been the source of much debate. Citing the statement of mission in ANGLICO'S Table of Organization, opponents of ANGLICO's inclusion in the SRI Group maintain that their function of supporting Allied and other US services are unique and separate from the surveillance and intelligence functions of the Group. This also is a short-sighted argument. The reality is, most ANGLICO detachments deploy as elements of MAGTFs, to support allied or other US forces operating adjacent to or in support of MAGTFs. Frequently, these organizations rely on the fire support assets of the MAGTF. As such, ANGLICO brings the MAGTF commander capabilities of key interface and communications links with these other US or allied services that enhance inter-operability. And as direct participants on proximate battlefields, ANGLICO teams:

"...have tremendous potential as information and intelligence contributors to the target and situation, development processes that should not be overlooked."¹⁹

Further, as the SOC idea expands to MEBs and MEFs, ANGLICO fire support teams will be required to play an even more integrated role with other SRI Group elements of the Maritime Special Purpose Forces. The location of ANGLICO in the Group will enhance the training, integration and development of these forces. As many of these opportunities are beyond currently described tasks, a review and modification of ANGLICO's primary mission statement is in order.²⁰

(8) Maritime Special Purpose Force (MSPF). Elements of the SRI Group also provide the core elements of the MSPF for deploying MAGTFs. The MSPF is task organized to perform in extremis hostage rescue and other special operation missions requiring "surgical" skills not normally resident in the MAGTF. Recent experiences in Panama have demonstrated that combining special operations and conventional force capabilities is a force multiplier. Marine Corps efforts over the past five years in this integration will continue to develop as the MEU(SOC) concept expands to MEBs and MEFs.

CONCEPT OF OPERATIONS

"Philosophers have observed that the most common form of human stupidity is forgetting what one is trying to do. Organizations are as prone to forgetting as humans."²¹

In the realm of changing bureaucracy in the FMF, it is important periodically to ask oneself, "What is the Marine Corps trying to do?" Everyone associated with the SRI Group activation

has an opinion as to how it should function; however, promulgation of written tactical doctrine and concepts has been slow. Meanwhile, elements of the SRI Group have been participating in exercises and deployments for the last year without the benefit of formal guidance. What follows is a suggested method of organizing and employing SRI Group assets within the MAGTF.

Initial Headquarters Marine Corps guidance for the development of the SRI Group concept is appropriately general as it does not address or identify all the specific functional tasks, structure, doctrine, tactics or procedures. FMF units, in which on-site learning would expand the operational knowledge base on this new organization, were to provide these subsequent studies, input and analyses. I and II MEFs' involvement in the SRI Group activation process and participation in exercises, deployments and contingency operations has delayed analysis, study and doctrinal development. Some individuals close to the situation describe it as attempting to fix one's broken plumbing without turning off the water to the pipes! The objective of what the Marine Corps is trying to do with the SRI Group concept is sometimes forgotten. Except for a much delayed, incomplete effort at the Marine Corps Warfighting Center, no comprehensive study of how the SRI Group should operate exists.

While there is generally consensus on what the SRI Group should to be able to do when fully functional, a variety of ideas and opinions exist on where to begin for development of a concept

of operations and a division of authority and responsibility for tasking and supervision. These differing opinions and ideas throughout MAGTFs in all MEFs, while healthy in fostering debate in academic circles, are impeding acceptance and development of an operational concept that enhances warfighting capabilities. And while there is no need for "mirror imaging" between MEFs, there is a need for some standardization of methodology within the Marine Corps to develop basic SRI Group doctrine. Until basic guidelines for operating are agreed upon, concept development will be slow and disjointed. A review of what common ground exists is a good point of departure for delineating tasks and roles for the SRI Group.

EXISTING GUIDANCE

The key guidance for the SRI Group concept of operations was promulgated by the Force Structure Study convened by the Commandant of the Marine Corps in 1988. This study and the CMC's guidance specified a major role for the SRI Group as a key part of the MAGTF:

"The SRI Group provides the MAGTF commander with an organization for coordinating and directing MAGTF assets that conduct intelligence functions and maritime direct action missions. The capability of any MAGTF to conduct time/target sensitive operations by specially trained, self-sufficient, sea-based Marines will reside in the SRI Group."²²

The guidance continues:

"The SRI Group is the MAGTF commander's focal point for all information gathering, intelligence and special operations functions. It is the point of contact in this area for all agencies external to the MAGTF."²³

The FSS/CMC guidance also listed various advantages for forming the SRI Group:²⁴

- Unity of command and operationally configured.
- Consolidates like functions/activities, mutual support and integration.
- Facilitates detachment deployment/employment.
- Facilitates internal task organization and training.
- Focal point for all SRI missions.

The next guidance published affecting the concept of operations for the SRI Group was the CG, FMF Atlantic Program of Action and Milestones (POA&M), dated 12 Sept 1988. This document, in establishing the framework for the activation of the 2d SRI Group, II MEF, emphasizes a type commander role for the SRI Group, and outlines the introduction of SRI Group detachments into MAGTFs.

"The 2d SRI Group is to be functionally organized to enhance training, preparation and execution of intelligence, communications and other missions in support of combat operations including those associated with SOC units . . . it is a source of specialized capabilities, specifically structured to provide detachments in support of MAGTFs or joint/combined operations as directed."²⁵

Though not yet published, a proposed Table of Organization Cover Letter tasks the SRI Group commander with the responsibility for:

"...organizing, training and equipping task organized detachments for service with MAGTFs or designated commanders to execute integrated reconnaissance, surveillance, intelligence, communications, direct action operations and air/naval gunfire liaison."²⁶

While most documentation emphasizes the functions of the SRI Group within the MAGTF, guidance delineating MAGTF staff responsibilities is also presented in the FMF, Atlantic POA&M:

"Intelligence collection, analysis, dissemination and EW missions will be conducted under the staff cognizance of the MAGTF G-2/S-2. Communications support missions will be conducted under the staff cognizance of the MAGTF G-6/CEO. Special operations, counter-terrorism, tactical deception and target/fire support missions will be conducted under the staff cognizance of the MAGTF G-3/S-3."²⁷

While the guidance is clear, it is not sufficiently specific in describing a division of tasking authority. Just how substantive of a role should the SRI Group commander (and subordinate detachments) have in planning, directing and executing MAGTF surveillance, reconnaissance, intelligence, direct action, communications and tactical deception? Solutions vary with each MAGTF with no one solution or proposal yet being agreed upon.²⁸

One course of action is to specify an extremely substantive role for the SRI Group in the direction of MAGTF surveillance, reconnaissance, intelligence and communications. This involvement of the SRI Group detachment OIC in the substantive matters is unwillingly applied by various MAGTFs in one of the MEFs. However, it obviates the role of the MAGTF G-2/S-2 and G-6/CEO. Further, it creates difficulty for the MAGTF commander in resolving jurisdictional disputes and deciding between SRI Group headquarters and staff principals.²⁹ MAGTF staffs are almost universally opposed to this idea; but, advocates of this approach maintain that it corresponds to FSS/CMC guidance in suggesting a substantive role for the SRI Group.

The other drastic approach is to limit the SRI Group role to training and provision of detachments only, without an SRI Group headquarters role in the MAGTF. This option is a similarly poor solution. This is described as the "business as usual" approach, as operations are conducted as they were prior to the formation of the SRI Group. This assembly of sub-detachments under the staff cognizance of MAGTF staff principals does not capitalize on the importance of maintaining a linkage between the tailoring, training, integration and feedback functions of the SRI Group and the actual performance of the separate detachments in MAGTF operations.

RECOMMENDATIONS

"The essence of brilliance is taking complicated matters and making them simple."

ADMIRAL RAYMOND SPRUANCE

Between these two extreme options is an approach that provides for the SRI Group role during MAGTF operations and yet maintains the primacy of MAGTF intelligence, operations and communication-electronics staff officers. The division of responsibilities under this proposal is:

A. Functionally organize SRI Group detachments for deployments with MAGTFs. The senior officer in the detachment will, besides his normal functional area duties, perform the duties of the OIC of the SRI Group detachment. The focus of the SRI Group Detachment OIC is on the efficiency, effectiveness and integration of the sub-detachments as tools for the MAGTF commander and staff principals. As a subordinate commander, he has the responsibility for training, structuring and maintaining SRI Group detachments, but is not in the tasking chain for sub-detachments or their functional components.³⁰ In practice, MAGTF command elements' relationships with sub-elements are temporary in nature. The detachment OIC provides sustained management functions of SRI Group assets. His primary role is as a resource manager. The SRI Group detachment OIC also has a responsibility to the SRI Group commander to evaluate the integration of SRI

Group units into MAGTFs and to ensure that the sub-elements are mutually supporting.

B. The tasking of sub-detachments, conduct of sub-detachments operations, and use of SRI Group sub-detachment output rests with the MAGTF Commander through his respective staff principals for intelligence, operations and communications. See figure 2.

The SRI Group detachment OIC has the responsibility for providing properly organized, trained and equipped elements to function under the cognizance of the MAGTF G-2/S-2 as follows:

A. The MAGTF Surveillance and Reconnaissance Center (SARC) is the single entity responsible for organizing, planning, coordinating, tasking and monitoring the collection of information from organic SRI Group resources in support of the MAGTF commander's stated EEIs and OIRs. The SARC, comprised of representatives from various disciplines from within the SRI Group, provides expertise, advice and interface with the subordinate elements of the Group. The SARC focuses on intelligence needs and a coherent plan to satisfy them.

B. The MAGTF All-Source Fusion Center (MAFC) receives, processes and analyzes information; provides fused, all-source intelligence based on the commander's EEIs and OIRs; and provides intelligence collection management support to the G-2/S-2. Though not yet fully manned, it should be comprised of experienced analysts, foreign area officer (FAO) specialists and intelligence officers who are familiar with theater and national

DIVISION OF FUNCTIONS

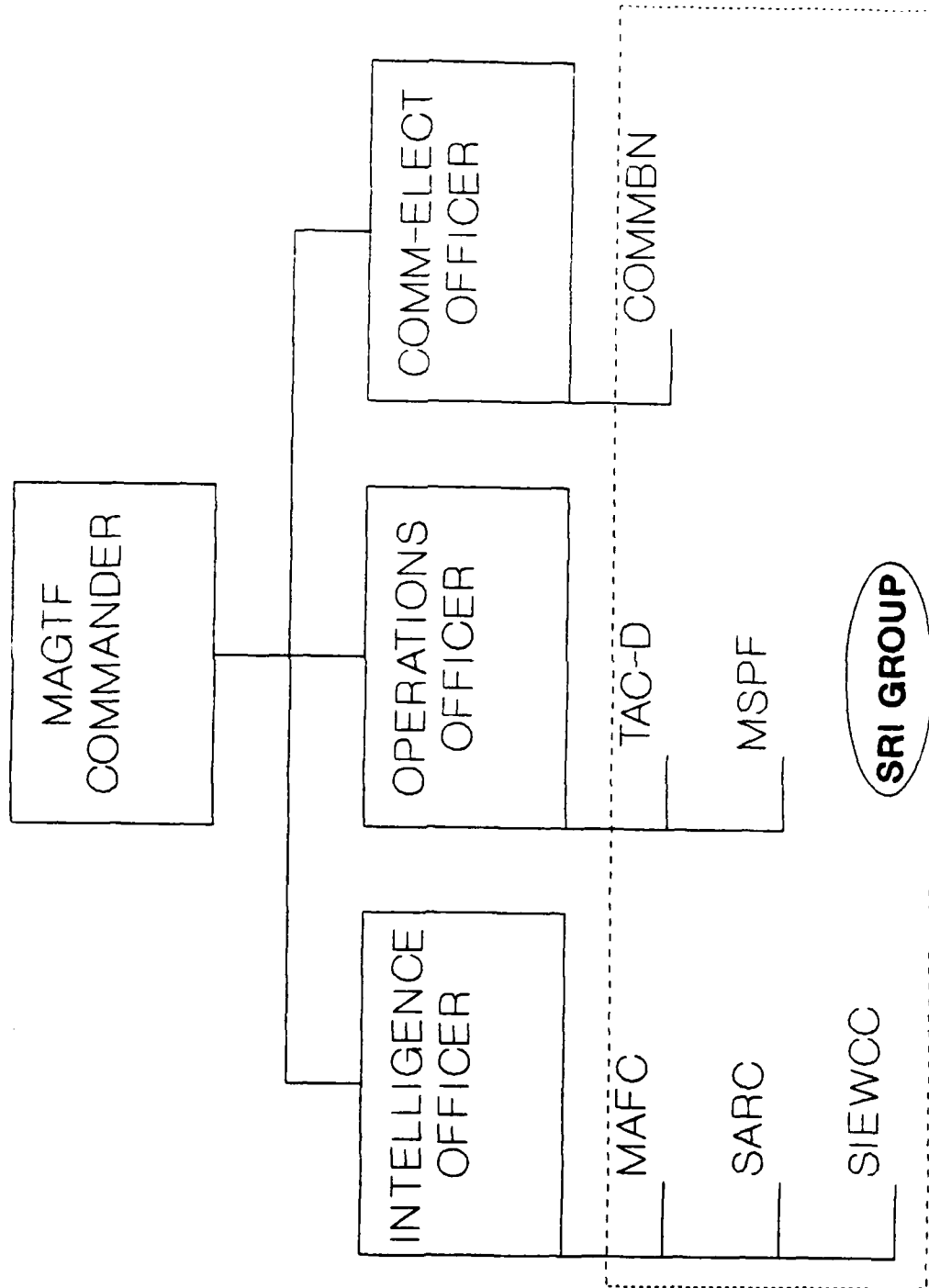


FIGURE 2

collection assets and the means to access them. In garrison, it should function under the SRI Group commander developing and maintaining area expertise and data bases on current threats and in support of contingency missions. During operations, it should function under the cognizance of the G-2/S-2 providing fused intelligence and connectivity between CATF, JTF commander and theater and national assets as appropriate.

C. The Signals Intelligence/Electronic Warfare Coordination Center (S/EWCC) is the focal point for signals intelligence and electronic warfare throughout the MAGTF.

The synchronization of intelligence assets is best accomplished when the MAGTF G-2/S-2 directly controls and has responsibility for:

A. Recommending intelligence requirements to the commander and directing the collection effort and all-source analysis for the production of intelligence.

B. Ensuring the timely dissemination of intelligence and combat information.

C. Planning, directing and supervising counterintelligence operations and operational security throughout the MAGTF area.

D. Planning and managing MAGTF IMINT, HUMINT, SIGINT and EW operations.

E. Situation and target development.

The SRI Group detachment OIC provides tactical deception capabilities, Maritime Special Purpose Forces and ANGLICO

elements for employment under the staff cognizance of the MAGTF G-3/S-3. But, the responsibility for the planning and execution of deception operations, special operations and coordination of fire support is the responsibility of the MAGTF G-3/S-3.

The SRI Group detachment OIC provides communications control facilities and capabilities to be employed under the staff cognizance of the MAGTF G-6/CEO. The MAGTF G-6/CEO retains the responsibility for all aspects of MAGTF communications.

Other specific tasks of the SRI Group detachment OIC are:

A. Advises the MAGTF commander and staff principals on SRI Group sub-detachments functions and capabilities that are under the cognizance of more than one MAGTF staff principal.

B. Advises the MAGTF commander and staff principals on training opportunities, maintenance requirements and performance standards of the sub-elements of the detachment.

To provide the MAGTF commander with an organization that can perform the missions defined in the MMP, SRI Group detachments should be tailored to include elements from the resources that comprise the SRI Group. However, it is not necessary for detachments supporting various levels of MAGTFs to have the same capabilities. Whereas RPVs may well support a MEB, their presence in a MEU would be almost insupportable due to shipping constraints, traditional missions of the MEU and areas of responsibility. Additionally, SRI Group officers acting as detachment OICs, at least at lower levels, have limited professional breadth about the functions assigned to the SRI

Group. Therefore, their impact on certain sub-elements of the detachment will vary.

This detachment concept provides the MAGTF commander with resident capabilities to conduct maneuver warfare that previously existed only in external agencies. Now, poised, readily accessible intelligence collection, analysis and fusion centers and tactical deception cells, deploy as part of the MAGTF. They assist the commander in rapidly identifying vulnerabilities and developing situations for MAGTF major subordinate elements to exploit before the enemy can react. Communications systems integration into this concept assists the commander in making the most effective use of scarce comm-electronics assets and satellite channels in prioritizing intelligence communications requirements. Intelligence in support of counterintelligence and maritime special operations is enhanced by the improved coordination the new structure brings. Figure 3 applies.

THE FUTURE

"We need to emphasize that the SRI Group's development is evolutionary. We must crawl, walk and then run. Every good carpenter ensures that he has built a good, firm foundation before he starts framing the walls and roof of the house he is constructing."³¹

Guidance contained in Letters Of Instruction established milestones for the initial organization of the SRI Groups in the Marine Corps. These milestones are currently being met. The 2d SRI Group is scheduled to be fully operational and fleshed

MAGTF ALL-SOURCE FUSION

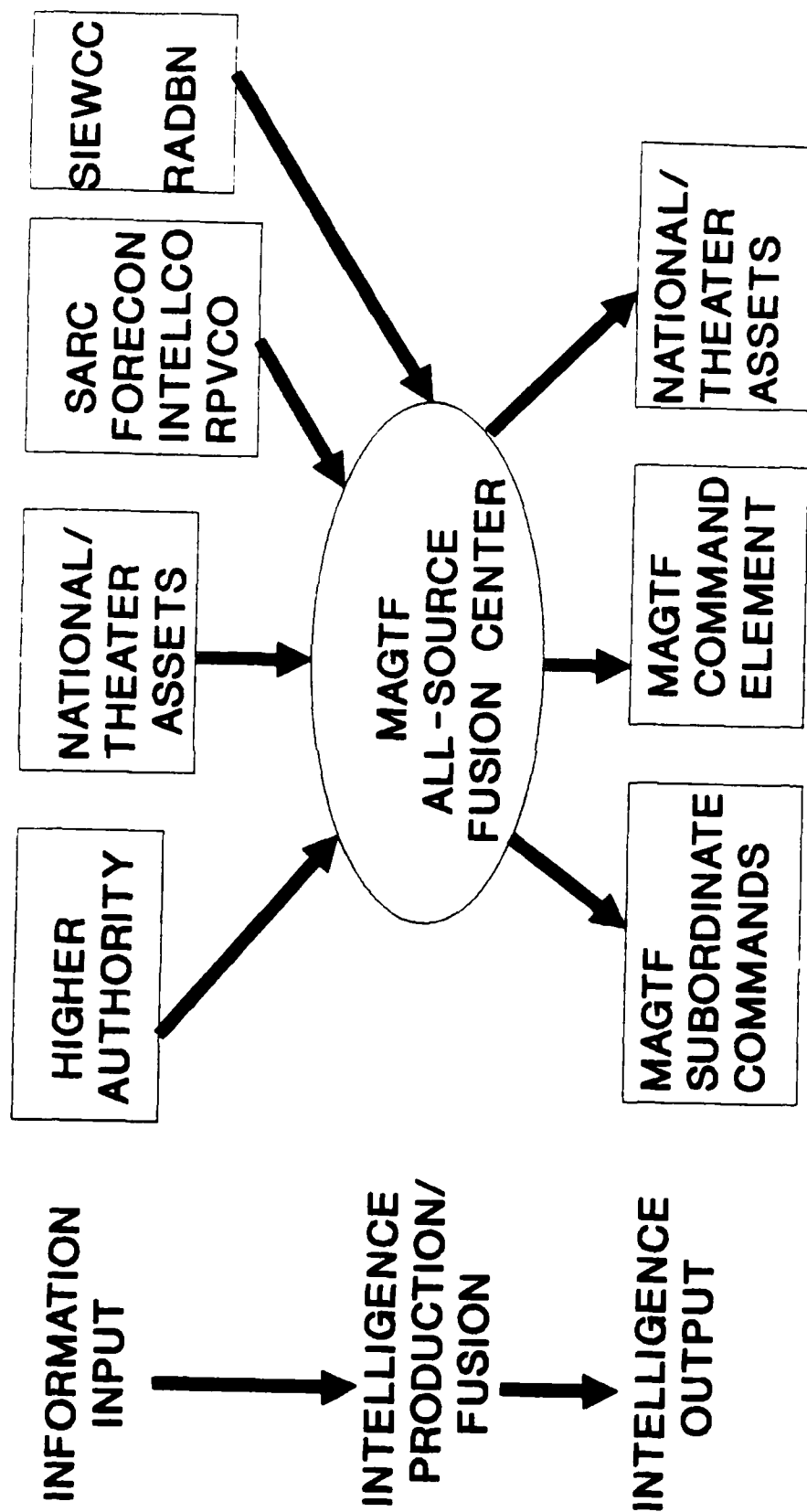


Figure 3

outwith personnel during FY90. It regularly provides detachments in support of MEU(SOC) operational deployments, and MEB and MEF exercises. The development of the 2d SRI Group has added importance because of the impact it has on the establishment of the subsequent SRI Groups. The 1st SRI Group, supporting I MEF was established at Camp Pendleton, California, in October, 1989, and the 3d SRI Group in support of III MEF in Japan is currently being activated. These organizations are building upon the experiences of the 2d SRI Group in II MEF.

There are some disadvantages associated with the SRI Group concept. Three new headquarters, the SRI Group headquarters, have been created. Initial "start-up" costs in manpower, facilities, equipment and funds have been incurred. While most of these costs were met by transferring assets from existing structure, the SRI Groups soon will compete for ever decreasing assets as fiscal and manpower austerity become reality.

Secondly, the SRI Group consolidates a diversity of functional activities. Little expertise currently exists within the Marine Corps to manage and coordinate the many functions in this diverse Group. Out of necessity, the span of control is extremely wide. There is no shortage of talented and experienced ground and aviation colonels to command regiments or aircraft groups. However, the number of officers with the wide range of experience to command effectively the diverse elements of the SRI Group is small. Management by exception will be an extremely important tenant for the SRI Group leadership to subscribe to.³²

To take full advantage of the potential benefits the SRI Group offers both current and future MAGTF commanders, development of these Groups should be considered in two phases. The focus of effort of the first phase, between the years 1990-1994, should emphasize:

- Establishing the primacy of the detachment concept of operations. The SRI Group must be perceived as a reservoir of capabilities to be integrated into the MAGTF. The SRI Group commander/detachment OIC should concern himself primarily with the efficiency and effectiveness of this integration.

- Gaining experience in detachment operations.

- Developing a nucleus of officers and SNCOs who will be sufficiently knowledgeable to provide the expertise necessary for the future management of the diverse functional activities of the SRI Group.

- Consolidating administrative and logistics functions as necessary to gain economies of scale to survive forthcoming austere manpower and budgetary climates. This may require further consolidation of some organizations within the SRI Group. As an example, Intelligence Company could be restructured as an Intelligence Battalion, possibly incorporating RPVCO, FORECON and ANGLICO with the other already existing structure. This could enhance operational integration and training opportunities and reduce personnel and facilities requirements while consolidating administrative and maintenance functions.

Phase II, the year 1995 and beyond, should emphasize development of:

- The SRI Group as the nucleus of MAGTF C⁴I² systems. Consideration should be given to transferring all FMF Information Systems Management Officer (ISMO) functions to the SRI Group to simplify operational integration.³³

- The SRI Group as a source of expanded reconnaissance capabilities. Consideration should be given to transferring LAVs and aviation observation, reconnaissance and EW assets to the SRI Group. Additionally, the SRI Group will provide a sound organization for the introduction and integration into the MAGTF of new advancements, including improved RPVs, robotics and laser firing technologies.

- Eventual recognition of the SRI Group as a major subordinate command of the MAGTF. The SRI Group can do for C⁴I² what the combat service support element does for logistics. Figure 4 depicts a proposed future MAGTF structure.

Some of these visions of the future may seem farfetched. Yet, while the idea of the SRI Group is revolutionary, the development of the concept is evolutionary. And, as such, evolutionary adjustments will be needed to improve the structure, organization, methods of operation, and doctrine development. As experience suggests, necessary changes should be made where practical (i.e., exclude COMMBN and ANGLICO from the SRI Group structure if experience so dictates).

PROPOSED MAGTF STRUCTURE

(POST-1994)

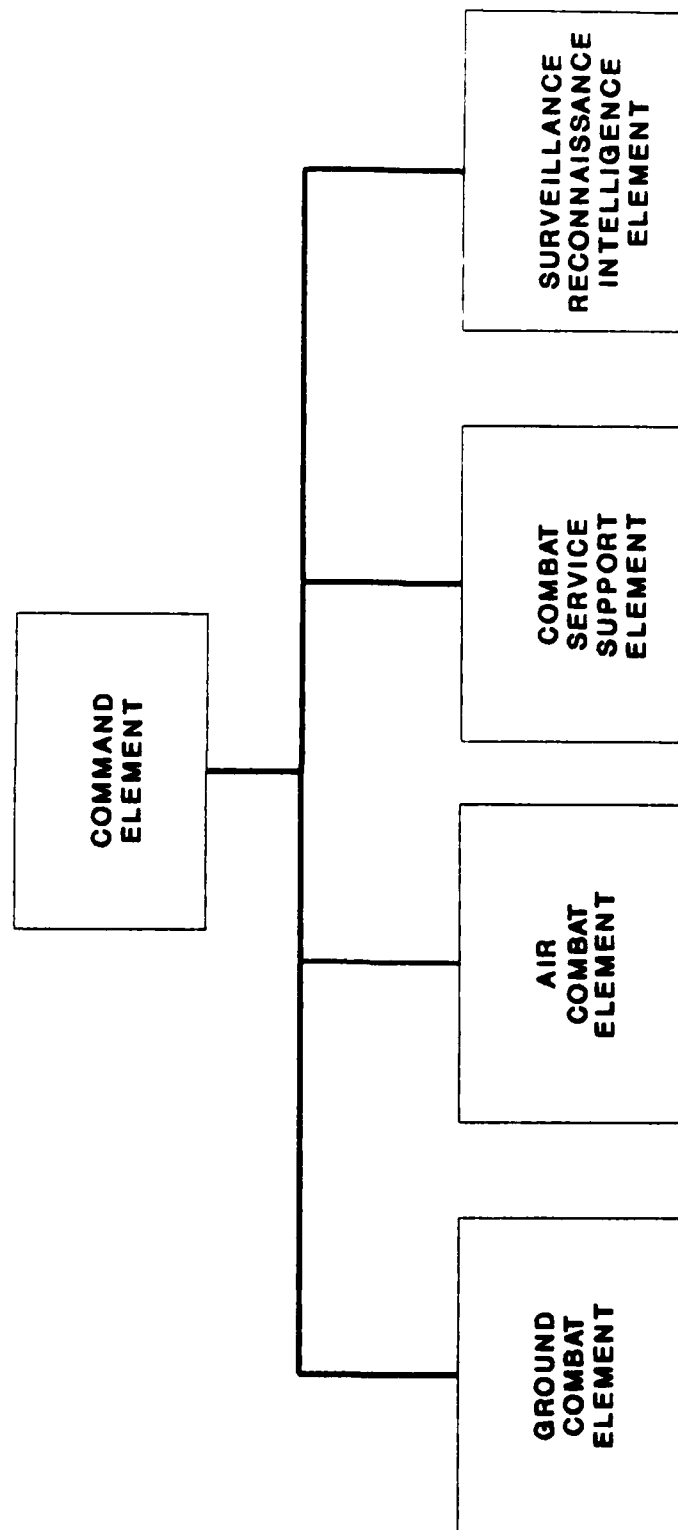


FIGURE 4

CONCLUSIONS

In maneuver warfare, the MAGTF commander places critical demands on the intelligence and electronic warfare systems and uses the products to plan and direct all phases of the battle. His staff must ensure the integration of the products of the systems with the combined arms operations of both the GCE and ACE. The assets of the SRI Group integrate national, theater and battlefield assets with the collection means of the ACE, GCE and CSSE to identify opportunities for exploitation and provide early warning to the MAGTF commander.

Although current guidance outlines SRI Group structure and capabilities, many misconceptions exist as to functions in relation to the MAGTF staff. Traditional relationships and ways of functioning have changed! The unwillingness of MAGTF subordinate commanders and staff principals to accept these changes continues to impede development of sound doctrine and a viable SRI Group concept of operations.

The SRI Group provides a single headquarters and point of contact for MAGTF elements, separate battalions and external agencies to deal with. The concept improves unity of effort as its functions and activities are operationally configured to enhance mutual support, training and integration.

The SRI Group is not an organization to be fought as a tactical unit. It is a reservoir of consolidated capabilities for the collection, processing, transmission of intelligence,

electronic warfare, tactical deception, and the execution of maritime special operations across the spectrum of conflict. When properly integrated with the MAGTF, the SRI Group can contribute significantly to success on the maneuver battlefield.

This new concept is subject to change and refinement. We should not allow parochial thinking and traditional mindsets to obstruct necessary development of innovative ideas in this vital area.

George Washington at Trenton, the Marines at Tinian and more recently, the Israelis in the Bekaa Valley in 1982 demonstrated that commanders who best employ flexible, responsive and effective C³I systems in the execution of fire and maneuver, even against numerically superior or stronger forces, are usually victorious. The SRI Group will enhance MAGTF commanders' abilities to focus their strengths against future opponents' vulnerabilities.

ENDNOTES

1. U.S. Marine Corps, MAGTF Master Plan, Washington, July 7, 1989, p. 1-3; Commandant of the Marine Corps, Force Structure Study Group Report, Washington, undated, pp. 3-12; U.S. Marine Corps Combat Development Command, Proposed SRI Group Operational Concept, Quantico, undated, pp 2-3.
2. U.S. Marine Corps, MAGTF Master Plan, Washington, July 7, 1989, p. 3-1.
3. Karl von Clausewitz, On War, ed. and trans. by Michael Howard and Peter Paret, Princeton University Press, 1976.
4. U.S. Marine Corps, Ground Combat Operations, OH 6-1, Quantico, January, 1988, pp. 2-1 through 2-6.
5. Sun Tzu, The Art of War, trans. S. B. Griffith. New York: Oxford University Press, 1982, p. 101.
6. U.S. Marine Corps, Warfighting FMFM-1, Washington, March 6, 1989, p.59.
7. Ibid., p.35.
8. U.S. Department of the Army, National Training Center, National Training Center Observations, Fort Irwin, November 20, 1985, p. 17.
9. U.S. Department of the Army, Intelligence and Electronic Warfare Operations FM 34-1, Washington, July 1987, p 1-1.
10. U.S. Marine Corps, Intelligence FMFM 2-1, Washington, August 25, 1985, p. 1-3.
11. U.S. Department of the Army, Division Intelligence and Electronic Warfare FM 34-10, Washington, November 25, 1986, pp.1-3/4.
12. Ibid., p.1-4.
13. Ibid., p.3-30.
14. U.S. Marine Corps, Tri-Marine Expeditionary Force Field Intelligence Operations, 30 Aug 1988, chapt. 5, and II Marine Expeditionary Force Standing Operations Order, 15 Feb 1989, Annex B.
15. Force Structure Study, p. 2.

16. Proposed Operational Concept, pp. 5-7.
17. Gary I. Wilson, Major, USMC, "The SRI Conceptual Architecture," Marine Corps Gazette, Vol. 72, October 1988, pp. 68 & 69.
18. Bernard E. Trainor, LtGen, USMC(Ret), "Deception," Marine Corps Gazette, Vol. 70, October 1986, p. 86.
19. U.S. Marine Corps Combat Development Command, Proposed Operational Handbook 3-22, Surveillance, Reconnaissance and Intelligence Group, Quantico, undated, p. 6.
20. Interview with Colonel J.M. Furleigh, USMC, Commanding Officer 1st SRI Group, I MEF, 19 January 1990.
21. Graham T. Allison, Albert Carnesale, and Joseph S. Nye, Jr., Hawks, Doves, & Owls, New York, W. W. Norton & Co., 1985, p.3.
22. Force Structure Study Guidance, pp. 7-8.
23. Ibid., p. 8.
24. Ibid., pp. 10-12.
25. Fleet Marine Force Atlantic, Program of Actions and Milestones, Norfolk, September 12, 1988, Enclosure (2), p. 31.
26. U. S. Marine Corps, Proposed Table of Organization Number 4700, Washington, undated, p. 1.
27. Fleet Marine Force, Atlantic, Program of Action and Milestones, enclosure (2), p. 17.
28. Interview with LtCol B.A. Brunn, USMC, G-2, 5th MEB, 19 January 1990.
29. Robert R Odell, Analysis of 2d SRI Group Concept of Operations, Alexandria: Center for Naval Analysis, 15 March 1989, p.4.
30. Odell, p. 8.
31. Interview with Colonel R. H. Hart, USMC, Commanding Officer, 2d SRI Group, II MEF, 6 June 1989.
32. Ibid.
33. Alfred M. Gray, General, USMC, "Marines Streamline C³I, Merge Interoperability," Signal, Vol. 52, November 1989, pp. 81-83.